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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/395,993	09/15/1999	ALISON JOAN LENNON	169.1451	6766

5514 7590 01/08/2003

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

DASTOURI, MEHRDAD

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 01/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/395,993

Applicant(s)

LENNON, ALISON JOAN

Examiner

Mehrdad Dastouri

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-18,20-35,37-52,54-66,68-80 and 82-93 is/are pending in the application.

4a) Of the above claim(s) ____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) ____ is/are allowed.

- 6) ☒ Claim(s) 1,3-18,20-35,37-52,54-66,68-80 and 82-93 is/are rejected.

- 7) ☐ Claim(s) ____ is/are objected to.

- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) g.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Application/Control Number: 09/395,993
Art Unit: 2623

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on October 30, 2002, has been entered and made of record.
2. Objection to Claims 4-9 has been withdrawn in view of Applicant's amendment.
3. Applicant's arguments regarding Claims 1, 18, 35, 52, 66 and 80 have been fully considered but they are not persuasive.

Applicant argues in essence that prior art of record (Modestino et al) fail to disclose classifying a digital image as one of a plurality of stereotypes according to each identified pattern.

The Examiner disagrees and indicates that Modestino et al disclose a Markov Random Field (MRF) model-based approach image interpretation and classification by performing knowledge-based high-level processing via assigning higher level expressions (Stereotypes) to the classified objects (Page 606, Section I, Introduction, Paragraphs 1-3; Figures 1, 6(a)-6(c); Page 413, Column 1; Tables III (b) and III (c)). The region adjacency graph is classified based on higher-level expression or stereotypes (e.g., rural road scenes). "Rural Road Scenes" is a stereotype or higher-level expression consistent with the definition of "Stereotype" in the instant application Page 7, Lines 11-17. Modestino et al, furthermore, clearly contrast low-level processing based on the image primitives such as edges and regions, and high-level processing based on higher-level expressions (Page 606, Section I, second Paragraph). It should be further emphasized that the language of Claim 1 does not include the detailed

limitations referred to in the last line of Page 17 and Page 18, Lines 1-8 of the instant amendment.

Regarding Applicant's argument concerning Claim 8, it is submitted that Figure 1(c) represents the nodes of stereotype in a hierarchical arrangement based on the number of neighboring regions.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3-10, 18, 20-27, 35, 37-44, 52, 54-61, 66, 68-75 and 80, 82-89 are rejected under 35 U.S.C. 102(b) as being anticipated by Modestino et al (IEEE Paper ISBN: 0162-8828; A Markov random Field Model-Based Approach to Image Interpretation).

Regarding Claim 1, Modestino et al disclose a method of classifying a digital image, said method comprising the steps of:

segmenting said image into substantially homogeneous regions (Figure 1; Pages 607-608, Section II-B. The image in figure 1a is segmented into homogeneous regions, Sky, road, Car and Fields.);

processing said regions to provide a region adjacency graph for the digital image, said region adjacency graph representing adjacencies between said regions (Figure 1; Page 607, Column 2, Section IIB, first Paragraph. $G = \{R, E\}$ is the region adjacency

graph comprising of the set of nodes $R = \{R_1, R_2, \dots, R_N\}$ and the set of edges E connecting the regions.);

analyzing said region adjacency graph for predetermined patterns of regions (Figure 1; Page 607, Column 2, Section IIB, second Paragraph. $L = \{L_1, L_2, \dots, L_M\}$ is the set of all predetermined patterns of regions.); and

classifying said digital image as one of a plurality of stereotypes according to each identified pattern (Figure 1; Figures 6(a)-6(c); Page 413, Column 1; Tables III (b) and III (c). The region adjacency graph is classified based on higher-level expression or stereotypes (e.g., rural road scenes). The digital image is classified based on the identified patterns (features) of the regions as depicted in Figure 6 and Table IV.).

Regarding Claim 3, Modestino et al further disclose the method according to Claim 1, wherein said digital image is classified on the basis of a size of one or more regions of said digital image (Tables I-IV. Classification is based on the areas and the boundary lengths of the regions identified by the RAG nodes.).

Regarding Claim 4, Modestino et al further disclose the method according to Claim 3, wherein said digital image is classified on the basis of an adjacency of said regions (Figures 1 and 6(b). Region adjacency graphs are inherently generated based on the spatial dependence of objects in the relative proximity of each other as depicted in Figure 1(c).).

Regarding Claim 5, Modestino et al further disclose the method according to Claim 1, wherein said digital image is classified on the basis of semantic label content of said region adjacency graph (Page 613, Table III(b). Stereotypes are assigned to

region adjacency graph based on the semantic label content, i.e., "road, field" or "sky, field" as depicted in Table III(b).).

Regarding Claim 6, Modestino et al further disclose the method according to Claim 1, wherein said digital image is classified on the basis of a mean color of one or more regions of said region adjacency graph (Page 613, Table III(a), Average Gray Level of the regions).

Regarding Claim 7, Modestino et al further disclose the method according to Claim 1, wherein said plurality of stereotypes are stored in an association lookup table (Page 607, Column 2, Section IIB, second Paragraph. Set of all interpretation labels L is the database or lookup table for stereotypes or node labels.).

Regarding Claim 8, Modestino et al further disclose the method according to Claim 1, wherein said stereotypes are represented in a hierarchal arrangement (Figure 1; Tables I(a) and I9b). Figure 1(c) represents the nodes of stereotype in a hierarchical arrangement based on the number of neighboring regions. Based on associated cliques, Sky, Road and Car are represented in a hierarchical arrangement.).

Regarding Claim 9, Modestino et al further disclose the method according to Claim 7, wherein each of said stereotypes has a hierarchical path arrangement (Figure 1. Sky, Road and Car has a hierarchical path arrangement. Same concept is applicable to the higher-level expressions or node labels in Tables III(b) and IV(b).).

Regarding Claim 10, Modestino et al disclose the method according to claim 1, wherein said region adjacency graph is provided by analyzing contextual data

associated with one or more regions of said digital image (Figure 1, Page 607, Section IIB, first Paragraph).

With regards to Claims 18, 35, 52, 66 and 80, arguments analogous to those presented for Claim 1 are applicable to Claims 18, 35, 52, 66 and 80. Concerning Claims 52, 66 and 80, Modestino et al further disclose providing a set of labeled regions (Abstract Lines 5-10; Page 607, Column 2, Section IIB, second paragraph, set of labels $L = \{L_1, L_2, \dots, L_M\}$). Markov Random Field (MRF) model-based approach segments the image into a collection of disjoint regions that form the nodes of an adjacency graph. Once the adjacency graph has been determined, image classification will be achieved through assigning object labels to the segmented regions using domain knowledge, extracted feature measurements, and spatial relationship between the various regions (Abstract, Lines 5-10).

With regards to Claims 20, 37, 56, 70 and 84, arguments analogous to those presented for Claim 3 are applicable to Claims 20, 37, 56, 70 and 84.

With regards to Claims 21, 38, 55, 69 and 83, arguments analogous to those presented for Claim 4 are applicable to Claims 21, 38, 55, 69 and 83.

With regards to Claims 22, 39, 54, 68 and 82, arguments analogous to those presented for Claim 5 are applicable to Claims 22, 39, 54, 68 and 82.

With regards to Claims 23, 40, 57, 58, 71, 72, 85 and 86, arguments analogous to those presented for Claim 6 are applicable to Claims 23, 40, 57, 58, 71, 72, 85 and 86.

With regards to Claims 24, 41, 59, 73 and 87, arguments analogous to those presented for Claim 7 are applicable to Claims 24, 41, 59, 73 and 87.

With regards to Claims 25, 42, 60, 74 and 88, arguments analogous to those presented for Claim 8 are applicable to Claims 25, 42, 60, 74 and 88.

With regards to Claims 26, 43, 61, 75 and 89, arguments analogous to those presented for Claim 9 are applicable to Claims 26, 43, 61, 75 and 89.

With regards to Claims 27 and 44, arguments analogous to those presented for Claim 10 are applicable to Claims 27 and 44.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 11, 17, 28, 34, 45, 62-65, 76-79 and 90-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Modestino et al in view of Li et al (U.S. 5,930,783).

Regarding Claim 11, Modestino et al do not explicitly disclose the method according to Claim 10, wherein said contextual data comprises information generated by one or more separate sources of said information.

Li et al disclose a semantic and cognition based image retrieval methodology comprising analyzing contextual data generated by one or more separate sources of

information (Figure 1B, Semantic-based Query, Cognition-based Query; Column 12, Lines 30-40).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Modestino et al invention according to the teachings of Li et al to analyze contextual data generated by one or more separate sources of information because it will expand versatility of the image segmentation and classification. It will utilize the advantages of image retrieval based on both image semantics and visual examples of the image (Li et al, Column 3, Lines 27-35).

Regarding Claim 17, Modestino et al do not explicitly disclose the method according to Claim 1, wherein said digital image is stored in a database of digital images and wherein said classification can be used to retrieve said digital image from said database.

Li et al disclose a semantic and cognition based image retrieval methodology wherein the digital image is stored in a database of digital images and wherein the classification can be used to retrieve said digital image from the database (Column 4, Lines 32-50).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Modestino et al invention according to the teachings of Li et al to use classification to retrieve the digital images stored in a database because it will utilize a plurality of information sources for image retrieval including semantic-based, cognition-based and scene-based queries thereby eliminating weakness of the individual approaches (Li et al; Column 3, Lines 27-35).

With regards to Claims 28 and 45, arguments analogous to those presented for Claim 11 are applicable to Claims 28 and 45.

With regards to Claim 34, arguments analogous to those presented for Claim 17 are applicable to Claim 34.

With regards to Claims 62, 76 and 90, arguments analogous to those represented for Claim 64 concerning utilizing an icon is applicable to claims 62, 76 and 90.

With regards to Claims 63, 77 and 91, arguments analogous to those presented for Claim 17 are applicable to Claims 63, 77 and 91. Li et al retrieve the digital image by using a keyword representing a stereotype (Column 12, Lines 30-50).

With regards to Claims 64, 78 and 92, arguments analogous to those presented for Claim 17 are applicable to Claims 64, 78 and 92. Neither Modestino nor Li et al explicitly retrieve the digital image by using an icon to represent a stereotype. Utilizing an icon to represent a keyword is extremely well known in the art (Official Notice).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Modestino et al and Li et al combination to Utilize an icon for representing a keyword because icons are a significant factor in the user-friendliness of graphical user interface that serve as visual mnemonics to allow the user to control certain computer actions without having to remember commands or type them at the keyboard.

With regards to Claims 65, 79 and 93, arguments analogous to those presented for Claim 17 are applicable to Claims 65, 79 and 93. Li et al retrieve the digital image

by using a keyword representing a generalization of a stereotype (Column 12, Lines 30-50).

8. Claims 12-16, 29 and 46-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Modestino et al further in view of Li et al (U.S. 5,930,783) and Jain et al (US 6,360,234).

Regarding Claim 12, neither Modestino et al nor Li et al disclose the method according to Claim 11, wherein a corresponding portion of said contextual data is obtained from a temporal region of interest for each source of said information.

Jain et al disclose a method for video cataloging by providing metadata associated with the image wherein a corresponding portion of contextual data is obtained from a temporal region of interest for each source of information (Figures 6-9; Column 6, Lines 30-67).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Modestino et al and Li et al combination according to the teachings of Jain et al to obtain a corresponding portion of the contextual data from a temporal region of interest for each source of information because it will accurately classify and intelligently extract information, termed metadata, about the contents of video stream in real time (Jain et al, Column 1, Lines 46-49).

Regarding Claim 13, Jain et al further disclose the method according to Claim 12, further comprising the step of providing metadata associated with said digital image, wherein said metadata includes said stereotypes of said digital image (Figures 16 and 17; Column 13, Lines 52-67, Column 14, Lines 1-31).

Regarding Claim 14, Jain et al further disclose the method according to Claim 13, wherein said metadata includes a hierarchical path associated with said respective stereotype of each digital image (Figures 9, 15-17; Table 1; Column 8, Lines 22-61).

Regarding Claim 15, Jain et al further disclose the method according to Claim 14, wherein said hierarchical path is stored with a respective stereotype as a metadata object which is associated with a respective image object (Figure 6; Column 6, Lines 29-38).

Regarding Claim 16, Jain et al further disclose the method according to Claim 14, wherein said hierarchical path is stored as a referenced lookup table (Figure 7).

With regards to Claims 29 and 46, arguments analogous to those presented for Claim 12 are applicable to Claims 29 and 46.

With regards to Claim 47, arguments analogous to those presented for Claim 13 are applicable to Claim 47.

With regards to Claim 48, arguments analogous to those presented for Claim 14 are applicable to Claim 48.

With regards to Claim 49, arguments analogous to those presented for Claim 15 are applicable to Claim 49.

With regards to Claim 50, arguments analogous to those presented for Claim 16 are applicable to Claim 50.

With regards to Claim 51, arguments analogous to those presented for Claim 17 are applicable to Claim 51.

9. Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Modestino et al in view of Jain et al (US 6,360,234).

Regarding Claim 30, Modestino et al do not disclose the method according to Claim 18 further comprising the step of providing metadata associated with said digital image, wherein said metadata includes said stereotypes of said digital image.

Jain et al disclose a method for video cataloging by providing metadata associated with the digital image, wherein the metadata includes stereotypes of the digital image (Figures 16 and 17; Column 13, Lines 52-67, Column 14, Lines 1-31).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Modestino et al invention according to the teachings of Jain et al to provide metadata associated with the digital image, wherein the metadata includes stereotypes of the digital image because it will accurately classify and intelligently extract information, termed metadata, about the contents of video stream in real time (Jain et al, Column 1, Lines 46-49).

With regards to Claim 31, arguments analogous to those presented for Claim 14 are applicable to Claim 31.

With regards to Claim 32, arguments analogous to those presented for Claim 15 are applicable to Claim 32.

With regards to Claim 33, arguments analogous to those presented for Claim 16 are applicable to Claim 33.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular and for After Final communications.

Art Unit: 2623

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.



Mehrdad Dastouri
Patent Examiner
Group Art Unit 2623
January 6, 2003